



Switch 7700

Installation Guide

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Contents

Chapter 1 About This Guide	7
1.1. Conventions	7
Chapter 2 Overview	9
2.1. Introduction to the 3Com Switch 7700	9
2.1.2. Modular Hardware Architecture	9
2.1.3. I/O Module Interfaces	10
2.1.4. Software Features	10
2.1.5. Maintenance	10
Chapter 3 Switch 7700 Components	11
3.1. Switch Chassis	11
3.1.2. Switch Backplane	11
3.1.3. Fabric Module	12
3.1.4. Reset Button	12
3.1.5. Console port	12
3.1.6. Switching I/O Modules	14
3.1.7. Power System	19
3.1.8. Fan Assembly (3C16856)	19
3.1.9. Switch Specifications	19
Chapter 4 Preparing for Installation	23
4.1. Safety Information	23
4.1.1. General Safety Recommendations	23
4.1.2. Electrical Safety	23
4.1.3. Placement Safety	23
4.1.4. Preventing Electrostatic Discharge Damage	24
4.1.5. Laser Safety	24
4.2. Installation Site Requirements	25
4.2.1. Temperature/Humidity	25
4.2.2. Cleanliness	25
4.2.3. Anti-static	25
4.2.4. EMI Interference	26
4.2.5. Grounding	26
4.2.6. Installation Space	26
4.3. Installation Tools	27
Chapter 5 Installing Hardware	29
5.1. Installing the Chassis	29
5.1.1. Installing in a Standard Cabinet	29

5.1.2. Installing on a Workbench.....	29
5.2. Installing a Card	29
5.3. Connecting the Ground Wire.....	30
5.4. Connecting Power Cords	30
5.5. Installing the Fan Assembly	30
5.6. Connecting the Cables.....	31
5.6.1. Console Cable	31
5.6.2. AUX cable.....	32
5.7. Connecting I/O Module Interface Cables	33
5.7.1. Connecting Electrical Port Cables.....	33
5.7.2. Connecting Fiber Connectors	34
5.8. Post-installation Checklist	35
Chapter 6 Configuring and Booting Software	37
6.1. Configuration.....	37
6.2. Setting Terminal Parameters	37
6.3. Booting the Switch 7700	41
6.3.1. Powering up and Booting.....	41
Chapter 7 Software Maintenance.....	45
7.1. BOOT Menu	45
7.2. Upgrading Software Using Xmodem.....	46
7.3. Upgrading Software Using Ethernet.....	48
7.3.1. Upgrading Software Using TFTP	48
7.3.2. Upgrading Software Using FTP	49
7.4. Lost Passwords.....	50
Chapter 8 Hardware Maintenance	51
8.1. Replacing a Power Module	51
8.2. Replacing Cards.....	51
8.3. Replacing the Fan Assembly	52
Chapter 9 System Troubleshooting.....	53
9.1. Troubleshooting the Configuration	53
9.1.1. No information is displayed on the terminal	53
9.1.2. The displayed characters are illegible.....	53
9.2. Troubleshooting Power	53
9.3. Troubleshooting the Fan	54

9.4. Troubleshooting the Cards.....	54
Chapter 10 Technical Support	55
10.1. Online Technical Services.....	55
10.1.1. World Wide Web Site.....	55
10.1.2. 3Com Knowledgebase Web Services.....	55
10.1.3. 3Com FTP Site	55
10.2. Support from Your Network Supplier	56
10.3. Support from 3Com.....	56
10.3.1. Email Support	56
10.3.2. Telephone Support	56
10.4. Returning Products for Repair.....	58

Chapter 1 About This Guide

This guide describes the 3Com® Switch 7700 Ethernet switch and how to install hardware, configure and boot software, and maintain software and hardware. This guide also provides troubleshooting and support information for your Switch 7700 system.

1.1. Conventions

Table 1 and Table 2 list conventions that are used throughout this guide.

Table 1 Notice Icons




Icon	Notice Type	Description
	Information note	Information that describes important features or instructions.
	Caution	Information that alerts you to potential loss of data or potential damage to an application, system, or device.
	Warning	Information that alerts you to potential personal injury.

Table 2 Text Conventions

Convention	Description
Screen displays	This typeface represents information as it appears on the screen.
Keyboard key names	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+), for example: Press Ctrl+Alt+Del
The words "enter" and type"	When you see the word "enter" in this guide, you must type something, and then press Return or Enter. Do not press Return or Enter when an instruction simply says "type."
Words in <i>italics</i>	Italics are used to: <ul style="list-style-type: none">- Emphasize a point.- Denote a new term at the place where it is defined in the text.- Identify menu names, menu commands, and software button names. Examples: From the <i>Help</i> menu, select <i>Contents</i>. Click <i>OK</i>.

Chapter 2 Overview

2.1. Introduction to the 3Com Switch 7700

The 3Com Switch 7700 system, shown in Figure 1, is a modular Layer 2/Layer 3, full wire-speed, Ethernet switch with large capacity. This switch is used to converge the IP layers of a Metropolitan Area Network (MAN), a large Enterprise Network, or a campus network.

Figure 1 Photograph of Switch 7700



The Switch 7700 supports up to 48 Gigabit Ethernet ports and 288 Fast Ethernet ports and provides a total switching capacity of 64Gbps.

2.1.2. Modular Hardware Architecture

The Switch 7700 can be installed in a standard 19-inch wide cabinet. The chassis includes slots for modules, fan and power supplies.

- The module area includes one Fabric module slot and 6 I/O module slots. The Fabric module is mandatory. I/O modules are optional.
- The power supply area includes 3 power slots. The switch provides N+1 power source redundancy backup (2 AC modules are enough for normal operation of the switch) and supports power load balancing and alarm indication.
- The fan slot has one fan frame slot and an operation failure alarm.

2.1.3. I/O Module Interfaces

The Switch 7700 supports I/O modules that offer from 8 to 48 ports, as described in the following list:

- 8-port 1000BASE-X (GBIC) GE module (8GBIC) (3C16858)
- 8-port 10/100/1000BASE-T auto-sensing GE module (8BT) (3C16859)
- 24-port 100BASE-FX-MMF FE multi-mode fiber module (24FX) (3C16861)
- 48-port 10/100BASE-T auto-sensing FE module (48TX) (3C16860)

2.1.4. Software Features

The Switch 7700 software delivers complete networking solutions such as routing protocols, VLAN control, QoS and network management.

2.1.5. Maintenance

The Switch 7700 provides the following convenient maintenance functions:

- Management options: Telnet, console, and remote modem dial-up
- Fault diagnosis tools: port self-loop, port activating/de-activating
- Hot swap support for fan, power, Fabric and I/O modules
- Flexible software upgrades and online upgrades

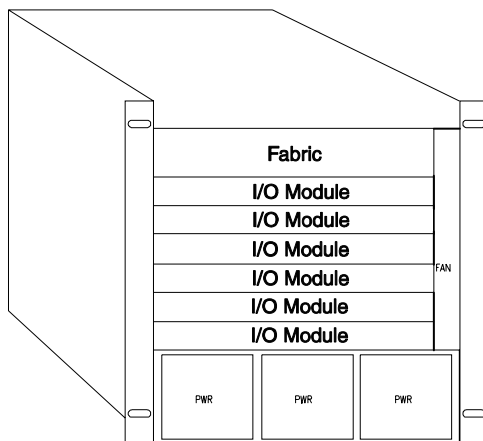
Chapter 3 Switch 7700

Components

3.1. Switch Chassis

The Switch 7700 has module, fan, and power distribution slots, as shown in Figure 2.

Figure 2 Switch 7700 slots



Each slot has the following characteristics:

- There are 7 slots for modules. The top slot is reserved for the Fabric and the remaining 6 slots are for any combination of I/O modules.
- The fan slot is located on the right side of the chassis.
- The power area is on the bottom of the chassis and supports up to three sources for AC power

3.1.2. Switch Backplane

The Switch 7700 backplane is part of the integrated chassis and delivers high-speed data transfer between the Fabric and I/O modules. The backplane bandwidth capacity is 120Gbps.

The backplane supports the following functions:

- Interconnection of various signals between modules and provides communication channels
- Hot swapping for modules
- Auto-recognition of slots
- Distribution of power and management of the power supply for the system
- Monitoring of the fan frame and power frame signals

3.1.3. Fabric Module

The Fabric is the core of Switch 7700 system. It has the following functions.

- Connects the I/O modules through the backplane and forwards Layer 2 and Layer 3 data
- Manages and calculates routing
- Fulfills the switch's software upgrade and system reset functions
- Monitors system power and the fan frame

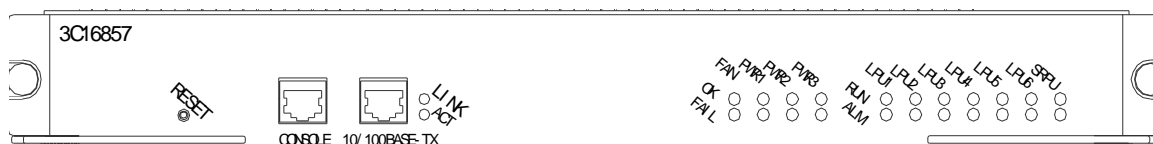
A detailed description of Fabric attributes is provided in Table 3

Table 3 Fabric attributes

Item	Fabric Module (3C16857)
CPU	MPC8260
BootROM	1MB
SDRAM	128MB
Flash	16MB
Dimensions (L x W)	366.7mm x 340mm
External ports	One console port, supporting local and remote dial-up configuration management of the switch. One 10BASE-T/100BASE-TX port for upgrade and network management
Maximum power consumption	80W

The front panel of the Fabric has a reset button; a console port; a 10BASE-T/100BASE-TX port; and 11 LEDs that show the status of the I/O modules, Fabric, power modules, and fan frame, as shown in Figure 3.

Figure 3 The Fabric (3C16857) front panel



3.1.4. Reset Button

The reset button resets the entire system.

3.1.5. Console port

The console port is connected to the configuration terminal using an RJ-45 connector for system debugging, configuration, maintenance, management, loading application files. The console port can also be connected to a modem for functions such as, system remote debugging, configuration, maintenance and management etc. You can configure the baud rate on the console port. Detailed console port attributes are described in Table 4.

Table 4 Console port attributes

Attribute	Description
Port connector	RJ-45
Port standard	Asynchronous EIA/TIA-232
Baud rate	9600bps (by default)
Transmission distance	15m (45 ft)

Attribute	Description
Services supported	Connect with character terminal Connect with local or remote PC serial port and run terminal emulator on PC (a pair of Modems are needed for remote connection)

10/100BASE-TX Ethernet Management Port

The Ethernet port can be connected to a computer using an RJ-45 connector for system application downloading and debugging. It can also be connected to devices such as a network management workstation for managing the system remotely. Detailed Ethernet port attributes are described in Table 5.

Table 5 Attributes of the 10/100BASE-T port

Attribute	Description
Port connector	RJ-45
Number of port(s)	1
Port speed	10Mbps, half/full duplex 100Mbps, half/full duplex MDIX
Medium and maximum transmission distance	Category-5 twisted pairs for transmission within 100m (300 ft)
Port function	Switch software upgrade and network management

Table 6 describes the LEDs of the Ethernet ports.

Table 6 Description of the 10/100BASE-T port LEDs

Indicator	State description
LINK	Off — the line has not connected. Green — the line is connected.
ACTIVE	Green — there is no data transmitted. Green Flashing — data is being transmitted or received.

Module LEDs

The MOD1 to MOD 6 LEDs show the state of the I/O modules, as described in Table 7.

Table 7 Description of module LEDs

Indicator	State description
RUN	Green/Off — the module fails to work or has not been inserted Green Flashing — the module works normally
ALM	Off — the module works normally or has not been inserted Remaining green or green flashing — the module fails to work or something abnormal happened

Power Indicators

PWR1, PWR2, and PWR3 LEDs show the states of the power modules, as described in Table 8.

Table 8 Description of power LEDs

Indicator	State description
OK	Green — the corresponding power works normally. Off — the corresponding power fails to work or has not been installed.
FAIL	Green — the corresponding power fails to work. Off — the corresponding power works normally or has not been installed.

Fan Indicator

FAN LEDs show the state of the corresponding fan frame, as described in Table 9.

Table 9 Description of fan LED

Indicator	State description
OK	Green — the fan works normally. Off — the fan fails to work or has not been installed.
FAIL	Green — the fan fails to work. Off — the fan works normally or has not been installed.

3.1.6. Switching I/O Modules

The Switch 7700 provides 6 I/O modules slots below the Fabric (FAB64) slot. (See Figure 2-1). The Switch 7700 supports the following I/O modules:

- 8-port 1000BASEX (GBIC) GE module (8GBIC) (3C16858)
- 8-port 10/100/1000BASE-T GE module (8BT) (3C16859)
- 24-port 100BASE-FX MMF FE module (24FX) (3C16861)
- 48-port 10/100BASE-T auto-sensing FE module (48T) (3C16860)

Consider the following when selecting I/O modules:

- You can configure several I/O modules of the same type
- All 6 I/O module slots are the same and any combination of I/O modules can be inserted
- You should select I/O module port cables that are compatible with each installed I/O module

48-port 10/100BASE-T Auto-sensing FE Card (48T) (3C16860)

The 48T module provides 48 external 100Mbps Ethernet electrical ports and is illustrated in Figure 4.

Figure 4 The 48-port 10/100BASE-T Auto-sensing FE Card

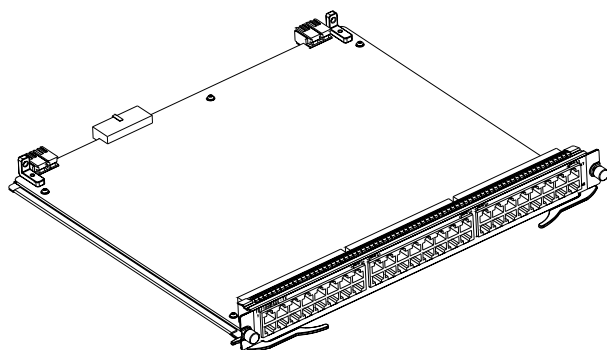


Table 10 describes the attributes of the 48TX module.

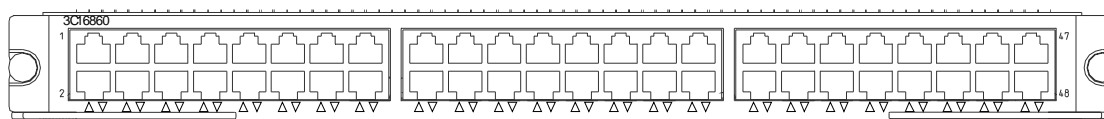
Table 10 Attributes of the 48-port 10/100BASE-T Auto-sensing FE Card

Attribute	48TX
CPU	MPC850
BootROM	512KB
SDRAM	64MB
Dimensions (L X W)	366.7mm x 340mm
Maximum power consumption	55W
Connector	RJ-45
Quantity of port(s)	48

Attribute	48TX
Port transmission speed	10M half/full duplex 100M half/full duplex MDI/MDIX auto-sensing
Optional cables and maximum transmission distance	The external cables are 4 Category-5 twisted pairs for transmission within 100m.
Compliance	IEEE802.3 IEEE802.3u IEEE802.3x

Each 100M Ethernet port has a green LED, indicating LINK/ACTIVE states. Off means the line is disconnected. Green flashing means data is being transmitted or received. The 48T panel and LEDs are illustrated in Figure 5.

Figure 5 The 48T (3C16860) panel



The 48T module requires two Category-5 twisted pairs of 100 ohm cable with an RJ-45 connector plug for transmission within 100 meters (300 feet).

8-port 1000BASEX (GBIC) GE Card (8GBIC) (3C16858)

The 8GBIC module provides 8 external Gigabit GBIC module ports. A GBIC module is used for each data receiving/transmitting channel. The following modules are available:

- 3CGBIC91
- 3CGBIC92
- 3CGBIC93
- 3CGBIC97

The 8GBIC module is illustrated in Figure 6.

Figure 6 The 8-port 1000BASEX (GBIC) GE Card

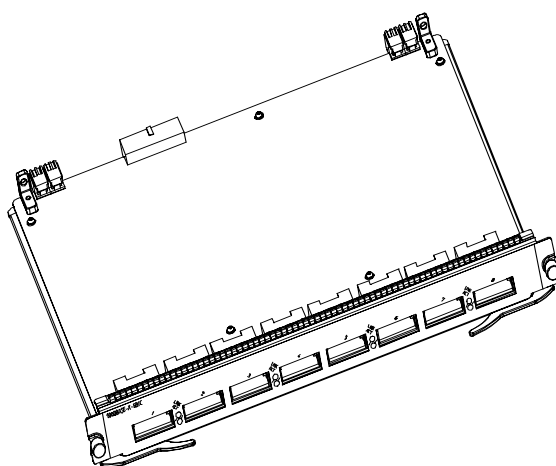


Table 11 describes the attributes of the 8GE module.

Table 11 Attributes of the 8-port 1000BASEX (GBIC) GE Card

Attribute	8GBIC
CPU	MPC850
BootROM	512KB
SDRAM	64Mb
Dimensions (L x W)	366.7mm x 340mm
Maximum power consumption	50W
Quantity of GBIC port(s)	8
Optional GBIC module types	3CGBIC 91 3CGBIC 92 3CGBIC 93 3CGBIC 97
Port transmission speed	1000Mbps, full duplex
Compliance	IEEE 802.3z IEEE 802.3x

Every 8GBIC port has a green LED, as shown in Figure 7.

Figure 7 The 8-port 1000BASEX (GBIC) GE module panel

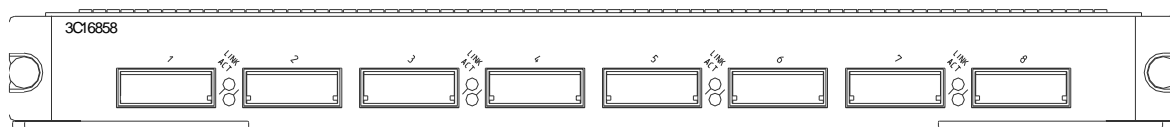


Table 12 describes the states of the LED.

Table 12 Description of the 8-port 1000BASEX (GBIC) GE module LED

Indicator	State description
LINK/ACT	Green (LINK) — The port is connected to another port
	Off (LINK) — The port has not been connected to any other port
	Green Flashing — Data is being transmitted or received via the port.

The cables for each of the supported 8GBIC modules are described in Table 13.

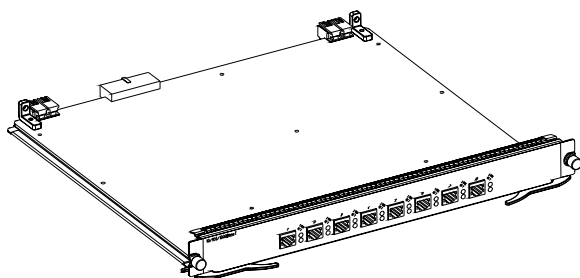
Table 13 Description of the module port cables

GBIC Module Type	Central Wave Length	Connector Type	Fiber Interface Specifications	Transmission Distance
3CGBIC91	850 nm	SC	50/125 mm Multimode Fiber	550 meters
3CGBIC92	1550nm	SC	9/125 mm Single Mode Fiber	10 Km
3CGBIC93	N/A	RJ-45	Cat 5E UTP	100 meters
3CGBIC97	1550nm	SC	9/125mm Single Mode Fiber	70 Km

8-port 10/100/1000BASE-T GE Card (8BT) (3C16861)

The 8BT module, shown in Figure 8, provides 8 external 10/100/1000Mbps auto-sensing Ethernet electrical ports.

Figure 8 The 8-port 10/100/1000BASE-T GE Card



Attributes of the 8BT module are described in Table 14.

Table 14 Attributes of the 8BT (3C16859) module

Attribute	8BT I/O module (3C16859)
CPU	MPC850
BootROM	512Kb
SDRAM	64MB
Dimensions (L x W)	366.7mm x 340mm
Maximum power consumption	50W
Connector type	RJ-45
Number of port(s)	8
Port transmission speed	10Mbps, half/full duplex 100M bps, half/full duplex 1000M bps, full duplex
Optional cables and maximum transmission distance	4 Category-5 non-shielded twisted pairs serve as external cables. The resistance value of each pair is 100 ohm. The cable has a maximum transmission distance of 100m.
Compliance	IEEE 802.3ab IEEE802.3 IEEE802.3u IEEE802.3x

Each port on the 8BT module has 2 LEDs, as shown in Figure 9.

Figure 9 The 8-port 10/100/1000BASE-T GE module panel

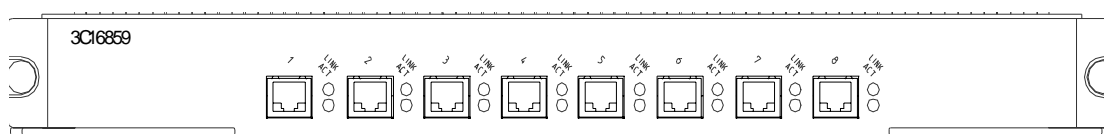


Table 15 describes the LEDs on the 8BT module.

Table 15 The 8-port 10/100/1000BASE-T GE module LEDs

Indicator	State description
LINK	Off — the link is not connected Green — the link is connected
ACT	Off — there is no data being transmitted The LED blinks when data is being transmitted or received

The 8BT module requires four Category-5 unshielded twisted pairs of 100 ohm cable with RJ-45 connectors for transmission within 100 meters (300 yards).

24-port 100BASE-FX MMF FE Card (24FX)

The 24FX module, shown in Figure 10, provides 24 100M multi-mode Ethernet optical port service channels.

Figure 10 The 24-port 100BASE-FX MMF FE module

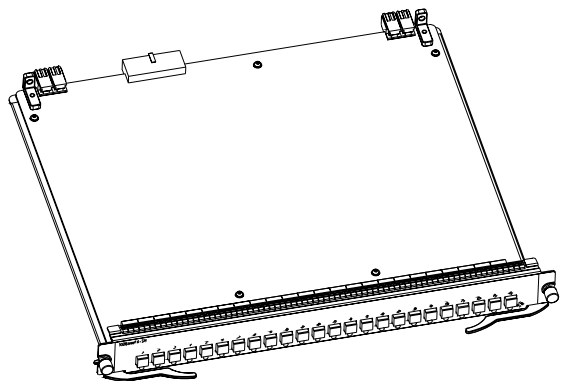


Table 16 describes the attributes of the 24 FX module.

Table 16 Attributes of the 24-port 100BASE-FX MMF FE module

Attribute	24FX (3C16861)
CPU	MPC850
BootROM	512KB
SDRAM	64Mb
Dimensions (L x W)	366.7mm x 340mm
Maximum power consumption	55W
Connector type	MT-RJ
Number of ports	24
Port transmission speed	100Mbps, full-duplex
Optional cables and maximum transmission distance	24FX: 62.5/125µm multi-mode optical fiber is used for transmission within 2km.
Compliance	IEEE 802.3 IEEE 802.3i IEEE 802.3u IEEE 802.3x

Each 100M optical port has a green LED, as shown in Figure 11.

Figure 11 The 24FX (3C16861) panel

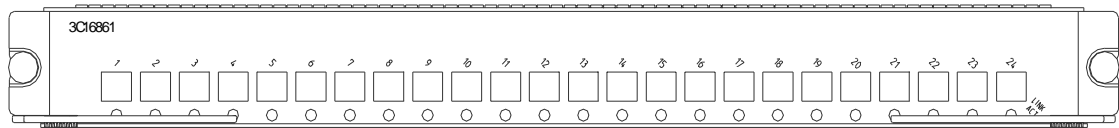


Table 17 describes the states of the FX24 module LEDs.

Table 17 Description of the 24FX (3C16861) LEDs

Indicator	State description
LINK/ACT	Green (LINK) — The port has been connected with another port properly.
	Off (LINK) — The port has not been connected with any other port.
	Green Flashing (ACT) — There are data being transmitted or received on the port.
1-24	Ethernet port numbers on the module

Table 18 describes characteristics of the 24FX cable.

Table 18 Description of the 24FX (3C16861) port cable

Card type	Central wavelength	Connector type	Interface cable	Transmission distance
24FX	850nm	MT-RJ	62.5/125μm multi-mode optical fiber	2km

3.1.7. Power System

Two power modules are sufficient to power a fully loaded Switch 7700 system. However, the switch provides 3 slots of power modules to implement N+1 redundancy backup.

The power distribution box of Switch 7700 is installed on the chassis floor close to the back of the chassis. It controls current connection, disconnection and distribution.

AC Power Module (3C16854)

The AC power source requires an AC power module and an AC distribution box.

The AC power module is connected to the external power source through an AC socket and is connected to the backplane. Specifications for the AC power module are listed in Table 19.

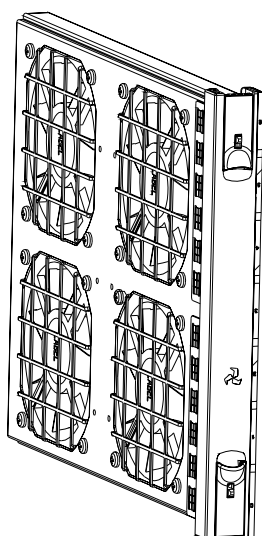
Table 19 AC power module specifications

Item	AC power module
AC input	100V to 240V, 47 to 63Hz
Maximum output power	460W

3.1.8. Fan Assembly (3C16856)

The fan assembly, shown in Figure 12, is installed on the right side of the Switch 7700. There are 4 120mm fans to cool the system. The fans are directly connected to the backplane through connectors. Operation fault signals are collected and transmitted to the system alarm board through the backplane.

Figure 12 Fan Assembly (3C16856)



3.1.9. Switch Specifications

This section provides detailed information about features of the Switch 7700. Table 20 below describes system specifications for the Switch 7700.

Table 20 Switch 7700 system specifications

Item	Switch 7700
Dimensions (W x H x D)	436mm x 486.2mm x 480mm (17in x 19in x 19in)
Weight (with all the components installed)	70Kg (154 lbs)
Fabric	1 Fabric slot
I/O Modules	Optional types include: 8-port GBIC GE electrical port (8GBIC) 8-port GE electrical port (8BT) 48-port 100M Ethernet electrical port (48TX) 24-port 100M multi-mode Ethernet optical port (24FX)
System switching capacity	64Gbps
System packet processing capacity	48Mpps
Input voltage	AC: 100V to 240V, 47 to 63Hz
System maximum power consumption (with all the components installed)	650W
Operation environment temperature	0 to 40 °C (32 to 104 °F)
Operation environment humidity	5% to 85%

Table 21 below describes service features of the Switch 7700.

Table 21 Switch 7700 service features

Service	Support
Wire speed Layer 2 switching	Switching capacity of 64Gbps Packet forwarding rate at 48Mpps Wire speed forwarding (with forwarding delay less than 10μs) for I/O Module ports
Port auto-negotiation	Speed and duplex operation modes.
Switching mode	Store and Forward mode
MAC address table	Address self-learning Complies with IEEE 802.1D standard and supporting port lock. Address table: up to 32K MAC (Media Access Control) address
STP/RSTP	Complies with IEEE 802.1D/802.1w Standard
Traffic control	IEEE 802.3x traffic control (full duplex) Back-pressure Based Flow Control (half-duplex)
Link aggregation	8-port GBIC GE optical module (8GBIC) and 8-port GE electrical module (8BT), up to 8 ports 48-port 100M Ethernet electrical I/O Module (48TX), 24-port 100M multi-mode Ethernet optical port I/O Module (24FX), up to 24 ports.
VLAN	4K VLANs, complies with IEEE 802.1Q standard Port-based VLAN GARP (Generic Attribute Registration Protocol) and GVRP (GARP VLAN Registration Protocol) Routing between VLANs
Broadcast storm suppression	Supported
Network protocol	TCP/IP stack ARP (Address Resolution Protocol) DHCP Relay (Dynamic Host Configuration Protocol Relay)
IP address table	Up to 64K IP address forwarding entries
IP routing	Static routing RIP (Routing Information Protocol) Version 1 and 2 OSPF (Open Shortest Path First) Version 2
Multicast	GMRP (GARP Multicast Registration Protocol) IGMP (Internet Group Management Protocol) PIM-DM (Protocol Independent Multicast-Dense Mode) PIM-SM (Protocol Independent Multicast-Sparse Mode)

Service	Support
AAA and Security	Access user authentication complies with IEEE 802.1x Local authentication and RADIUS authentication User hierarchical management and password protection ACL (Access Control List), L2/L3/L4 information filtration (including frame filtration based on port and source/destination MAC address, packet filtration based on source/destination IP address and type of the upper layer protocol etc.) Plain text and MD5 text authentication for OSPF and RIP Version 2. Authentication for SNMP (Simple Network Management Protocol) Version 3.
Reliability	VRRP (Virtual Router Redundancy Protocol)
QoS	Traffic classification Bandwidth management based on port, MAC address, IP address, TCP/UDP port number, ToS (Type of Service)/Diffserv value and CAR (Committed Access Rate). The granularity of bandwidth management is 64kbps. Priority-based on VLAN port, IEEE 801.1P and ToS/Diffserv. Support traffic classification to set CoS (Class of Service) 8 egress queues for each port Queue dispatching algorithm FIFO (First In First Out) and PQ (Priority Queueing).
Load and upgrade system software	Xmodem protocol. FTP (File Transfer Protocol) and TFTP (Trivial File Transfer Protocol)
System configuration/ System management	CLI (Command Line Interface) configuration mode. Configuration via console port Local/remote configuration via Telnet Remote configuration through dial-up via Modem Group 1, 2, 3 and 9 MIB of RMON (Remote Monitor) System log Hierarchical alarms
System maintenance	Alarm/debugging information filter, output and statistics Maintenance and diagnosis tools, such as Ping and Tracert etc. Remote maintenance through Modem dial-up and Telnet login.

Chapter 4 Preparing for Installation

This chapter describes safety, site requirements, and tools for your Switch 7700 installation.

4.1. Safety Information

Please follow local safety regulations when performing any operation with the Switch 7700. Follow the related safety information and special safety instructions provided by 3Com. 3Com bears no responsibility for accidents that occur due to violations of safe operation requirements.

Only trained and qualified personnel should install and maintain 3Com products.

4.1.1. General Safety Recommendations

Before beginning the installation of the Switch 7700, review these general safety requirements:

- Turn OFF all the power and remove all the power cords before opening the chassis.
- Keep the chassis clean and dust-free.
- Keep the chassis and installation tools away from high traffic areas.
- Do not wear loose clothing, jewelry or other objects that could get caught in the chassis when you install and maintain the switch.
- Wear safety glasses when working under any conditions that might be hazardous to your eyes.
- Do not perform any action that creates a potential hazard to people or makes equipment unsafe.

4.1.2. Electrical Safety

To maintain electrical safety, review the following requirements:

- Look carefully for possible hazards in your work area, such as ungrounded power extension cables, missing safety grounds, and moist floors.
- Locate the emergency power-off switch in the room where you are working. Shut the power off at once in case an accident occurs.
- Unplug all the power cords and external cables before moving the chassis.
- Never assume that power is disconnected from a circuit. Always check.
- Do not place the switch in a damp environment.

4.1.3. Placement Safety

Be sure to use caution when moving the Switch 7700. Consider the following requirements when moving the switch:

- Do not move the switch alone. Work with another person.
- Move the switch slowly. Never move suddenly or twist your body.
- Always disconnect all external cables (including power cord) before lifting or moving the chassis.
- Do not hold the power handles when carrying the switch.
- Do not put fingers into the vent of the chassis when carrying the switch.
- Since the power handles and vent have not been designed to bear the weight of the entire chassis, it may damage the switch or even the personnel when carrying the switch.

4.1.4. Preventing Electrostatic Discharge Damage

To prevent components from being damaged by electrostatic discharge (ESD), take anti-static measures for the area where the switch is located and note the points below:

- For safety, check the resistance value of the anti-static strap that is shipped with the Switch 7700. The resistance value should be between 1 and 10 megohm (Mohm).
- Always wear an anti-static wrist strap when installing the parts, especially the electronic printed circuit boards, of the switch.
- Grasp only the edge of the circuit board. Do not touch the components or the electric printed circuit.
- Avoid contact between the electric printed circuit board and your clothing. The anti-static wrist strap protects only the board from electrostatic damage on the body.

To put on the anti-static wrist strap:

1. Put your hand through the wrist strap
2. Tighten the strap to insure that it makes complete contact with your skin
3. Connect the anti-static wrist strap to the grounding pole of the switch chassis with the alligator clip, as shown in Figure 13.

Figure 13 Wearing an anti-static wrist strap



4.1.5. Laser Safety

Some I/O modules on the Switch 7700 have optical ports. If no optical connector is connected to the optical ports or if the dust-proof cover has been removed, there might be invisible laser radiation emitted from the port.

⚠ Caution: The laser can hurt your eyes. Do not stare into an open optical port.

4.2. Installation Site Requirements

The Switch 7700 can only be used indoors. To ensure that the switch works normally and to expand its service life, the installation environment should meet the requirements in the next section, Temperature/Humidity.

4.2.1. Temperature/Humidity

To ensure the normal operation and service life of the switch, a controlled level of temperature and humidity should be maintained in the equipment room. If the humidity in the equipment room is too high for a long time, it will lead to degradation of the insulating material. Under these conditions, some metal parts can rust. If the relative humidity is too low, the captive screws may loosen and the insulation washers can shrink.

In addition, electrostatic discharge is likely to be produced in a dry environment, which jeopardizes the CMOS circuit of the switch. The higher the temperature, the greater the damage it will do to the switch. High temperature for a long time will speed the aging process of the insulation materials, reduce the reliability of the switch, and affect its service life.

4.2.2. Cleanliness

Dust can impact the normal operation of the switch. If dust accumulates on the chassis, it can cause electrostatic adsorption, resulting in the poor contact of the connector or metal contact point. This happens more frequently when the relative indoor humidity is low, which not only shortens the service life of the switch, but also causes system failure. The required specifications on dust content and particle diameter in an equipment room is shown in Table 22.

Table 22 Equipment room dust specifications

Maximum diameter (μm)	0.5	1	3	5
Maximum intensity (particles per cubic meter)	1.4×10^7	7×10^5	2.4×10^5	1.3×10^5

In addition to requirements about dust, rigorous requirements on the air content of salts, acids and sulfides in an equipment room are also set. These harmful gases speed metal corrosion and the aging process of some parts. The equipment room should be protected from the invasion of harmful gases such as SO_2 , H_2S , NO_2 , NH_3 and Cl_2 . The value limits of these gases are shown in Table 23.

Table 23 Harmful gas limits in an equipment room

Gas	Average (mg/m^3)	Maximum (mg/m^3)
SO_2	0.2	1.5
H_2S	0	0.03
NO_2	0.04	0.15
NH_3	0.05	0.15
Cl_2	0.01	0.3

4.2.3. Anti-static

Although anti-static measures have been considered, electrostatic discharge is a threat and damages the electric circuit and, possibly, the equipment.

Electrostatic induction comes from the external electric field (such as high-voltage electricity transmission cable and lightning) and the internal system (including the indoor environment, floor material and the whole equipment structure). To avoid electrostatic damage, consider the following requirements:

- Be sure the equipment and the floor are well connected to the earth ground.
- Keep the room dustproof.
- Maintain suitable temperature and humidity.
- Wear an anti-static wrist strap and work clothes touching the circuit board with any part of your body.

4.2.4. EMI Interference

The installation of the switch can be affected by electromagnetic interference (EMI) sources. The interference from both inside and outside the equipment or the system affects the equipment in two ways: radiated interference and conducted interference.

Electromagnetic wave interference in the air is called radiated interference. Electrical coupling, magnetic coupling and electromagnetic coupling are conducted interference.

To prevent EMI interference:

- Adopt effective measures to reduce the interference on a switch caused by the power supply system
- Separate the working ground of the switch from the ground device of the power supply equipment or lightning-protection ground device as much as possible
- Keep the switch far away from high-frequency devices working in high currents
- Use electromagnetic shielding, filter and reduce grounding resistance when necessary

4.2.5. Grounding

A good grounding system is necessary for a switch to work reliably and the important guarantee of lightning protection, anti-interference and anti-static. You should provide a grounding system for the switch to insure that:

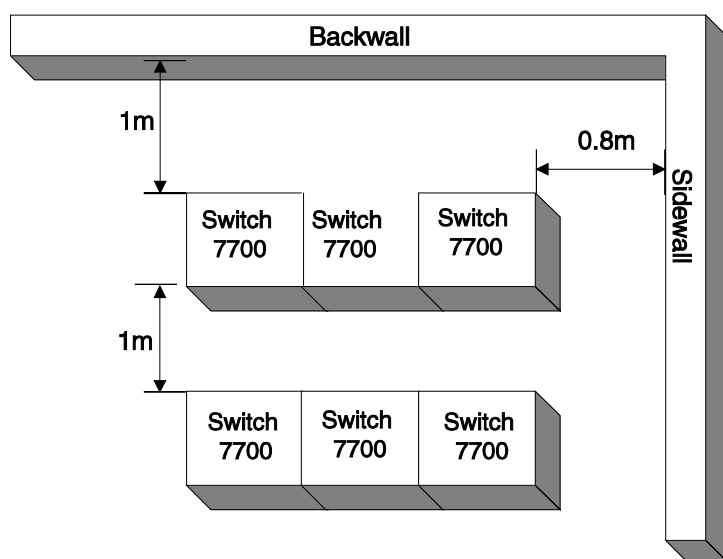
- Contact resistance of the grounding bar is less than 0.1 ohm (it must pass the test of 12V/25A)
- The grounding resistance value of the equipment room is less than 1 ohm
- The ground wire PGND is composed of alternated green and yellow wires. The sectional area of the grounding wire cannot be smaller than 25mm². The ground wire shall be kept as short as possible during the project construction
- Preventive measures have been taken to prevent erosion of the grounding bar
- The grounding bar is fixed with combined screws to avoid loosening

4.2.6. Installation Space

The Switch 7700 is a complex piece of equipment so it is necessary to make arrangements for the installation position, power supply, and cabling, as shown in Figure 14.

For better heat dissipation and equipment maintenance, 3Com recommends that you keep the front and back of the switch more than 1 meter away from the walls or other devices. The sides of the switch should be at least 0.8 meters away from the walls. If the optional cabinet is installed, the clear height of room should be more than 3 meters, inclusive.

Figure 14 Switch 7700 placement



4.3. Installation Tools

Table 24 provides a list of the tools you need to install the Switch 7700.

Table 24 Required installation tools

General tools	Measure and lineation tools	Long tape, ruler (of 1 meter), gradienter, marking pen, powder marker and pencil
	Drills	A percussion drill, several auxiliary drill bits, a vacuum cleaner
	Fastening tools	Flat-blade screwdriver P4-75mm Phillips screwdriver P1-100mm, P2-150mm and P3-250mm Socket wrench M5 Box-end wrench M6 Box-end wrenches (10-12) or open-end wrench (10-12)
	Small tools	Sharp-nose pliers, diagonal pliers, vices, hand-held electric drill, file, handsaw, crowbar and rubber hammer
Special tools	Anti-static wrist strap, cable stripper, crimping pliers, RJ-45 crimping pliers and wire punchdown tool	
Instruments	Multimeter, 500V Meg-ohmmeter (used to measure the insulation resistance), error detector, optical power meter and earth resistance tester	

Chapter 5 Installing Hardware

This chapter describes how to install the components of the Switch 7700.

5.1. Installing the Chassis

You can install the Switch 7700 in a standard, 19-inch cabinet or on a workbench.

5.1.1. Installing in a Standard Cabinet

Before you install the Switch 7700 in a standard cabinet, verify that:

- The cabinet has been well built
 - The installation position for the switch has been well arranged
 - There are no obstacles
 - The switch is ready for installation and has been carried to a place near the cabinet
1. Have two people carry the switch to the front of the cabinet.
 2. Put the switch on the tray or the guides and push it into the cabinet.
 3. Fix the switch in the cabinet with the combination screw and floating nuts that are shipped with the delivery accessories.

5.1.2. Installing on a Workbench

Before you install the Switch 7700 on a workbench, verify that:

- The workbench is firm enough to hold the switch and cables
 - There are no obstacles around the workbench
 - The switch is ready for installation and has been carried to a place near the workbench
1. Have two people carry the switch at both sides to the place in front of the workbench.
 2. Carry the switch a little higher than the workbench and lower it onto the workbench gently.

5.2. Installing a Card

To install a module:

1. Wear an anti-static wrist strap
2. Remove the blank filler panel from the chassis slot and save it for future use
3. Hold the ejector levers of the module with both hands and push them outward
4. Align the module with the guides in the chassis and slide it gently into the slot
5. Push the module until the positioning pin on its handle bar touches the hole in the chassis
6. Push the ejector levers inward and push the handle bar pin into the positioning hole in the chassis


7. Fasten the module's captive mounting screws into the holes in the chassis with a screwdriver

5.3. Connecting the Ground Wire

Generally, the cabinet has a grounding bar. The ground wire of the switch can be connected to the grounding bar of the cabinet.

To connect the ground wire:

1. Remove the screw from the grounding hole in the switch chassis.
2. Set the ground wire connector around the grounding screw.
3. Fasten the grounding screw in the hole on the chassis.
4. Connect the other end of the ground wire to the grounding bar of the switch.

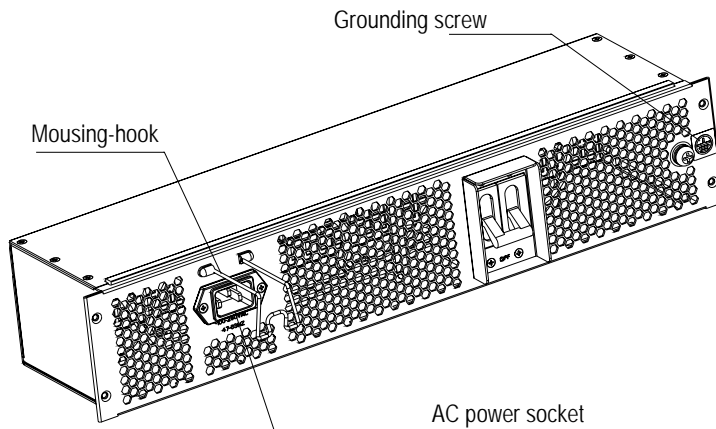
 **Warning:** For the safety of personnel and equipment, the switch must be well grounded. The resistance between switch chassis and the ground should be less than 1 ohm.


5.4. Connecting Power Cords

To connect the AC power cord:

1. Plug the AC power cord into the socket in the switch and hook the cord plug.
2. Plug the other end into a socket strip with surge protector. Connect the strip to the AC power source in the room, as shown in Figure 15.

Figure 15 AC power cord connection



 **Warning:** For surge protection, the AC power should be led through an external protection device into the Switch 7700.

5.5. Installing the Fan Assembly

1. Wear the anti-static wrist strap and take out the fan frame from the pack.

2. Hold the ejector levers on the fan frame with both hands and push them outward. Align the fan with the guides in the chassis and slide it gently into the slot. Push the I/O Module until its positioning pin touches the hole in the chassis.
3. Push the ejector levers inward and push the handle bar pin into the hole in the chassis.



Warning: For safety, do not touch any part of the product that is labeled with dangerous voltage labels.

5.6. Connecting the Cables

This section describes how to connect console and AUX cables to the Switch 7700.

5.6.1. Console Cable

The console cable is an 8-core shielded cable. One end of the cable has a crimped RJ-45 connector, which is plugged into the console port of the switch. The other end has both a DB-9-hole connector and a DB-25-hole connector for connection to a 9- or 25-hole serial port at the configuration terminal. Figure 16 illustrates the console cable and connectors.

Figure 16 The console cable

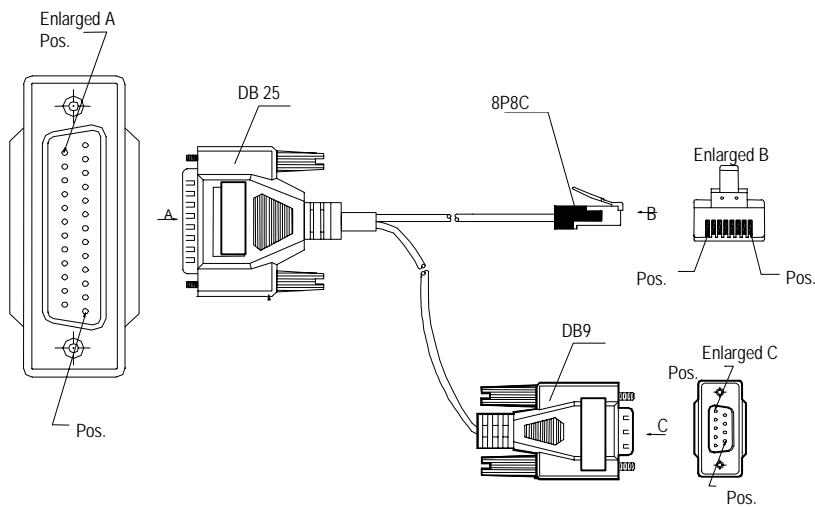


Table 25 Console cable pin-outs

RJ-45	Signal	Direction	DB-25	DB-9
1	RTS	<---	4	7
2	DTR	<---	20	4
3	TXD	<---	2	3
4	CD	--->	8	1
5	GND	----	7	5
6	RXD	--->	3	2
7	DSR	--->	6	6
8	CTS	--->	5	8

To connect a terminal or PC to the Switch 7700 with the console:

1. Plug the DB-9 or DB-25 female plug of the console cable to the serial port of the PC or the terminal where the switch is to be configured.
2. Connect the RJ-45 connector of the console cable to the console port of the switch.

5.6.2. AUX cable

An AUX cable is used for the Switch 7700 remote dial-up configuration using a modem.

The AUX cable is an 8-core shielded cable. One end of the cable is an RS-232 RJ-45 connector, which is used to plug into the switch at the console port. The other end has both a DB-9-pin connector and a DB-25-pin for connection to a 9- or 25-hole serial port on the virtual modem. Figure 17 illustrates the AUX cable.

Figure 17 The AUX cable

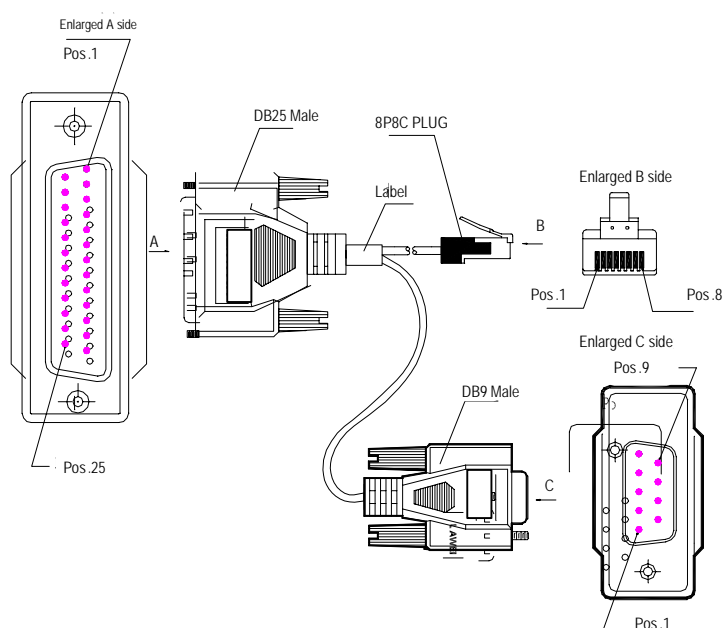


Table 26 AUX cable pin-outs

RJ-45	Signal	Direction	DB-25	DB-9
1	RTS	--->	4	7
2	DTR	--->	20	4
3	TXD	--->	2	3
4	CD	<---	8	1
5	GND	---	7	5
6	RXD	<---	3	2
7	DSR	<---	6	6
8	CTS	<---	5	8

To connect the AUX cable:

1. Plug the RJ-45 end of the AUX cable into the switch console port.
2. Connect the DB-25 (or DB-9) end of the AUX cable to the serial port of the virtual Modem.

5.7. Connecting I/O Module Interface Cables

This section describes how to connect electrical and optical cables.

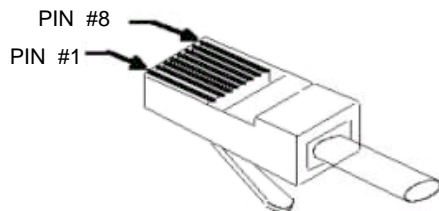
5.7.1. Connecting Electrical Port Cables

The 48TX port uses the RJ-45 connector and category-5 twisted pair cable as transmission medium. The 8BT port uses the RJ-45 connector, shown in Figure 18.

Use the following steps to connect the 48TX port:

1. Plug one end of the straight-through cable into the Ethernet RJ-45 port of the switch.
2. Plug the other end of the straight-through cable into the RJ-45 port of the hub or LAN Switch.

Figure 18 The RJ-45 connector




 **Note:** Ports on 48TX and 8BT modules support MDI/MDI-X auto-sensing.

Table 27 RJ-45 MDI port pin-outs

Pinout	10Base-T/100Base-TX		1000Base-T	
	Signal	Function	Signal	Function
1	Tx+	Send data	BIDA+	Send data to direction A
2	Tx-	Send data	BIDA-	Receive data from direction A
3	Rx+	Receive data	BIDB+	Send data to direction B
4	Reserved	-	BIDC+	Receive data from direction C
5	Reserved	-	BIDC-	Send data to direction C
6	Rx-	Receive data	BIDB-	Receive data from direction B
7	Reserved	-	BIDD+	Send data to direction D
8	Reserved	-	BIDD-	Receive data from direction D


 **Note:** Tx = Send data Rx = Receive data BI = Bi-directional data.

Table 28 RJ-45 MDI-X port pin-outs

Pinout	10Base-T/100Base-TX		1000Base-T	
	Signal	Function	Signal	Function
1	Rx+	Receive data	BIDB+	Send data to direction B
2	Rx-	Receive data	BIDB-	Receive data from direction B
3	Tx+	Send data	BIDA+	Send data to direction A
4	Reserved	-	BIDD+	Receive data from direction D
5	Reserved	-	BIDD-	Send data to direction D
6	Tx-	Send data	BIDA-	Receive data from direction A
7	Reserved	-	BIDC+	Send data to direction C
8	Reserved	-	BIDC-	Receive data from direction C

5.7.2. Connecting Fiber Connectors

When connecting fibers, use fiber connectors according to the optical port type of the peer equipment connected to the local network port module. Single-mode fiber is used for external connections of the single-mode optical port. Multi-mode fiber is used for external connections of the multi-mode optical port.

Before connecting the fibers, make sure the type of the connector and the fiber are consistent with the optical port type.

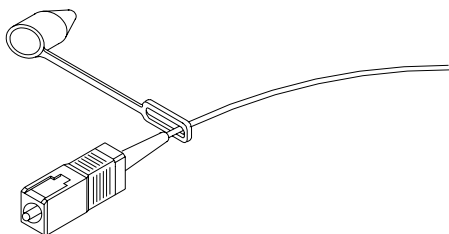


Warning: When the optical port is not connected with a fiber connector or when its dustproof cover is open, invisible radiation can escape from the optical port. Do not stare into the optical port directly. Cover the optical port if there is no connector plugged in.

SC fiber connector

The 8GBIC port uses an SC fiber connector, shown in Figure 19.

Figure 19 The SC fiber connector



1. Plug one end of the SC fiber connector into the optical port in the module.
2. Connect the other end of the connector to the corresponding device.

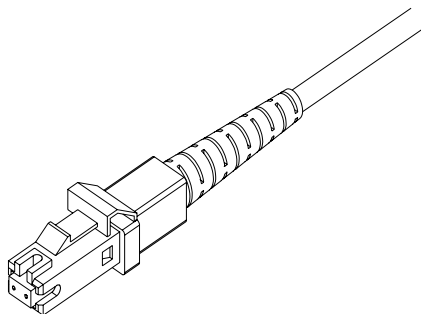


Caution: When connecting an SC fiber connector, the switch TX must be connected to the RX of the device on the network, and the switch RX must be connected to the TX of the device on the network.

MT-RJ fiber connector

24FX ports use an MT-RJ fiber connector, shown in Figure 20.

Figure 20 The MT-RJ fiber connector



1. Plug the MT-RJ fiber connector in the optical port into the module.
2. Connect the other end of the fiber connector to the corresponding device.

5.8. Post-installation Checklist


 **Caution:** Confirm that you have turned off the power before checking your installation. Improper connections can injure people or damage components of the switch.

Table 29 Installation check list

Item	Normal	Abnormal (Remarks)
Anti-static wrist strap		
console cable		
Ground wire		
Power cord		
FABRIC		
I/O Module		
Fan frame		

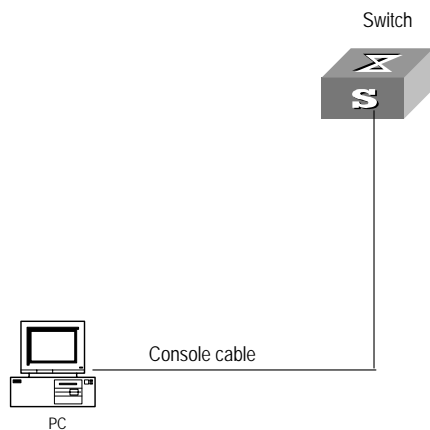
Chapter 6 Configuring and Booting Software

This chapter describes how to configure and boot the Switch 7700.

6.1. Configuration

Configure the local terminal and Switch 7700, using Figure 21 as a reference. The terminal (a PC in this example) is connected to the switch console port through a console cable.

Figure 21 Connecting the Switch 7700 to a PC



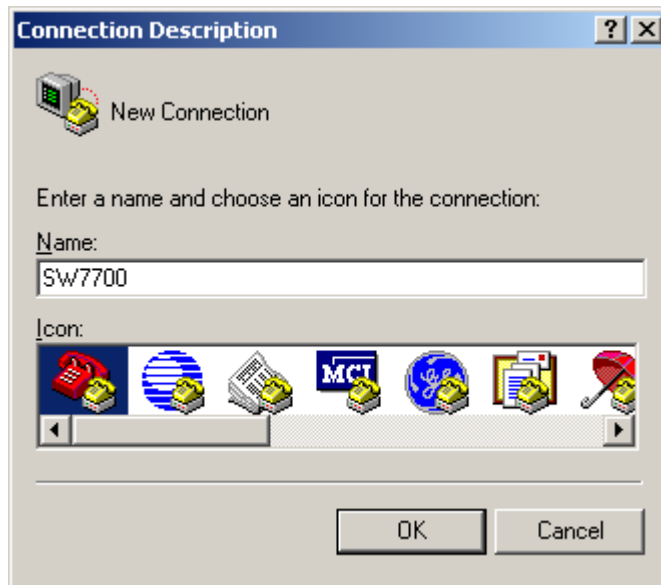
1. Plug the DB-9 or DB-25 female plug of the console cable into the serial port of the PC or the terminal where the switch is to be configured.
2. Connect the RJ-45 connector of the console cable to the console port of the switch.

6.2. Setting Terminal Parameters

To set terminal parameters

1. Start the PC and select *Start > Programs > Accessories > Communications > HyperTerminal*.
2. The HyperTerminal window displays the Connection Description dialog box, as shown in Figure 22.

Figure 22 Connection Description dialog box



3. Enter the name of the new connection in the *Name* field and click *OK*. The dialog box, shown in Figure 23 displays. Select the serial port to be used from the *Connect using* dropdown menu.

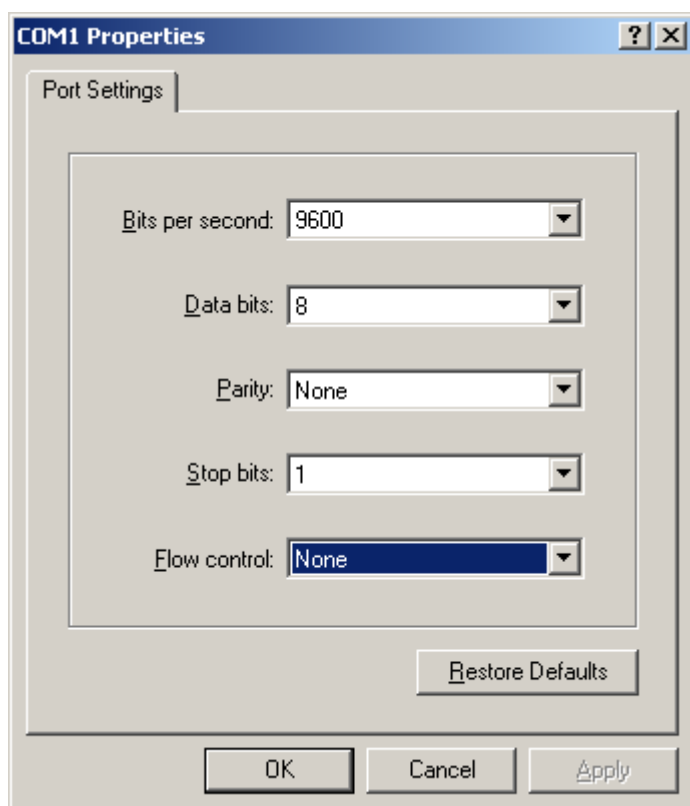
Figure 23 Properties dialog box



4. After selecting serial ports, click *OK*. The port shown in Figure 24 displays and you can set serial port parameters. Set the following parameters:
 - Baud rate = 9600
 - Databit = 8
 - Parity check = none
 - Stopbit = 1

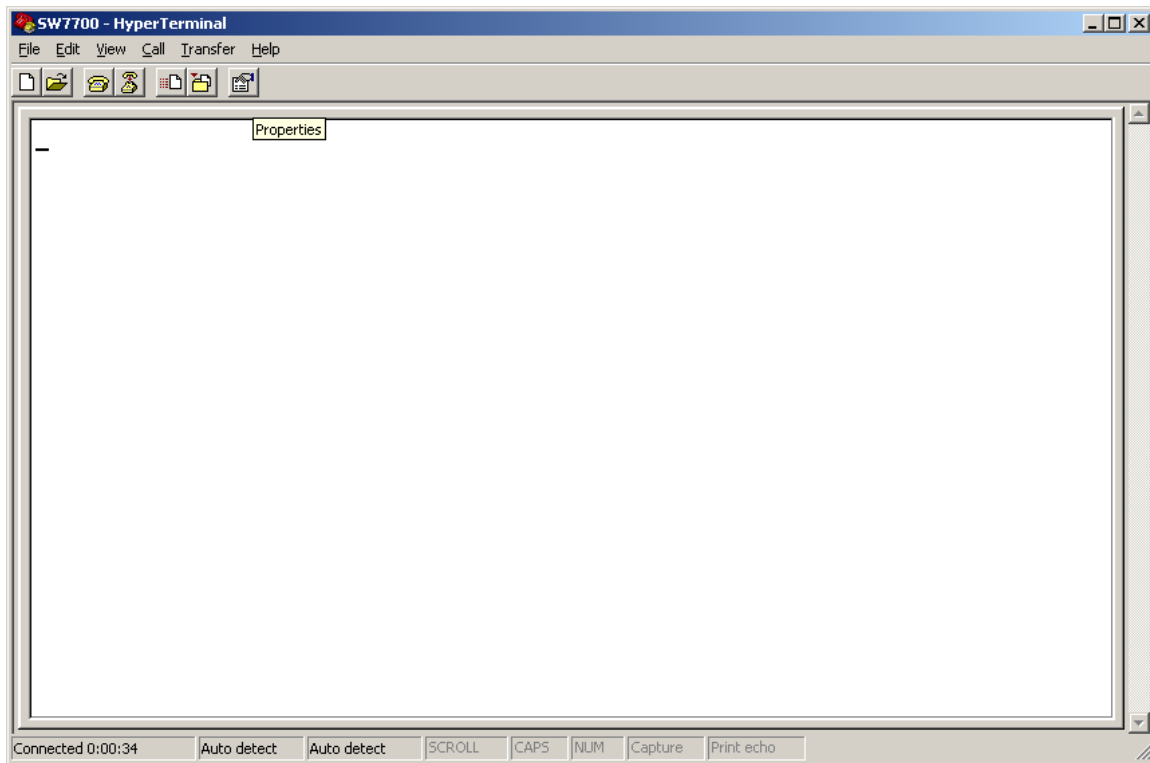
- Flow control = none

Figure 24 COM1 Properties dialog box



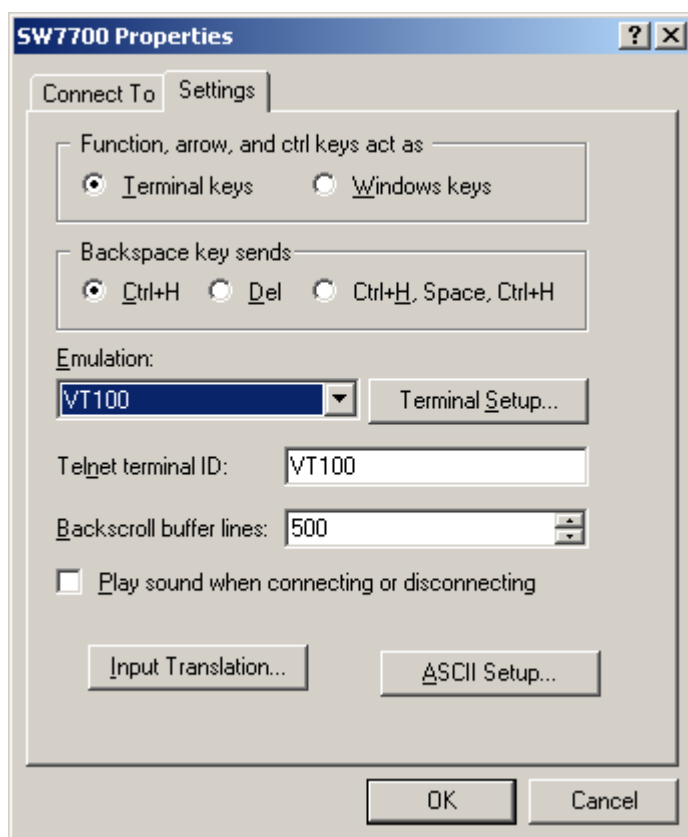
5. Click *OK*. The HyperTerminal dialogue box displays, as shown in Figure 25.
6. Select *Properties*.

Figure 25 HyperTerminal window



7. In the Properties dialog box, select the *Settings* tab, as shown in Figure 26.
8. Select *VT100* in the *Emulation* dropdown menu.
9. Click *OK*.

Figure 26 Settings tab



6.3. Booting the Switch 7700

Before powering on Switch 7700, check that:

- Power cords have been properly connected
- The voltage of power supply can meet the requirements on the switch.
- The console cable has been connected properly
- The PC or terminal for configuration has been started
- The configuration parameters have been set.

6.3.1. Powering up and Booting

Turn on the power for the Switch 7700 and run the BootROM program. The terminal displays the following information:

```
Starting.....
RAM Line....OK
System is booting.....
```

CONFIGURING AND BOOTING SOFTWARE

```
*****
*
*   Switch 7700 BOOTROM, Version 300   *
*
*****
```

```
Copyright(C) 2001-2005 by 3Com Corporation, Inc.
Creation date: Mar 25 2003, 09:33:05
CPU type      : MPC8260
CPU Clock Speed : 200Mhz
BUS Clock Speed : 66Mhz
Memory Size   : 256MB
```

```
FAB64 self testing.....
60X_SDRAM Data lines Selftest.....OK!
60X_SDRAM Address lines Selftest.....OK!
60X_SDRAM fast selftest.....OK!
Please check LEDs.....LEDs selftest finished!
Switch chip selftest.....OK!
CPLD selftest.....OK!
The switch Mac address is .....00E0.FC00.7505
```

Press Ctrl+B to enter Boot Menu... 5



Note: To enter Boot Mode (see Chapter 6), press Ctrl+B during the 5 seconds that “Press Ctrl+B to enter Boot Menu...5” is displayed. To perform decompression immediately, press ESC while this message is displayed. If you do nothing, the system enters the following auto-booting port within 5 seconds.

```
Auto-booting.....
Auto booting file is sw7700001.app
There are 2 files in this packet
FAB64 app file <<FAB64001.app>> is...OK
Decompress
Image.....
.....
.....
.....OK!
Starting at 0x60000...

User interface Aux0 is available
```

The display of these messages indicates the completion of the switch auto-booting. Press Enter and the terminal screen displays:

<3Com>

You can now begin the configuration for the Switch 7700.

Chapter 7 Software Maintenance

7.1. BOOT Menu

After powering on the Switch 7700, run BootROM program. The terminal displays the following information:

```
Starting.....  
RAM Line....OK  
System is booting.....  
*****  
*                                     *  
  
• SW 7700 BOOTROM, Version 1.00      *  
  
*                                     *  
*****  
Copyright© 2001-2005 by 3Com Corporation.  
  
Creation date       : May 26 2002, 10:23:31  
CPU type           : MPC8260  
  
CPU Clock Speed    : 200MHz  
BUS Clock Speed    : 66MHz  
Memory Size        : 128MB  
  
SW 7700 main board self testing.....  
60X_SDRAM Data lines Selftest.....OK!  
60X_SDRAM Address lines Selftest.....OK!  
60X_SDRAM fast selftest.....OK!  
LOCAL_SDRAM Data lines Selftest.....OK!  
LOCAL_SDRAM Address lines Selftest.....OK!  
LOCAL_SDRAM fast selftest.....OK!  
Please check leds.....Led selftest finished!  
Switch chip selftest.....OK!  
CPLD selftest.....OK!  
  
Press Ctrl-B to enter Boot Menu... 5
```

Press Ctrl+B. The system displays:

```
Initialize flash file system. Please waiting!  
Password :
```



Note: To access the BOOT Menu, press Ctrl+B during the 5 seconds that “Press Ctrl-B to enter Boot Menu...” displays. Within 5 seconds, the system begins program decompression. At this time if you want to access the BOOT Menu, you must reboot the switch.

Enter the BootROM password. After entering the correct password (no password is set for the switch by default), the system will access the BOOT Menu:



Caution: While using the switch, please keep in mind the modified BOOTROM password.

```

Boot Menu
1: Download application file to flash
2: Select application file to boot
3: Display all files in flash
4: Delete file from flash
5: Modify bootrom password
0: Reboot
Enter your choice(0-5):

```

7.2. Upgrading Software Using Xmodem

The Xmodem protocol transmits files through serial ports and supports both 128-byte and 1K-byte packets. Xmodem also supports two types of check; normal checksum and CRC. When there is a packet error, retransmission is supported, normally 10 times).

The Xmodem protocol completes transmission by receiving and sending programs. The receiving program first sends the negotiating characters to negotiate the check means. After passing the negotiation, the sending program begins to send the packet. The receiving program checks the packet according to the negotiated means after receiving a complete packet. The acknowledgement characters are sent after passing the check and then the sending program continues to send the next packet. If the check fails, negative characters are sent and the sending program sends the packet again.

1. Enter 1 in the BOOT Menu and press Enter. The system accesses the download application file menu:


```

1. Set TFTP protocol parameter
2. Set FTP protocol parameter
3. Set XMODEM protocol parameter
0. Return to boot menu
Enter your choice(0-3):3

```
2. Enter 3 in the download program menu.
3. Select the Xmodem protocol to implement the software upgrade.
4. Press Enter. The system enters the download rate-setting menu:


```

Please select your download baudrate:
1. 9600

```

```

2. 19200
3. 38400
4. 57600
5. 115200
0. Exit
Enter your choice (0-5):5

```

5. Select the appropriate download speed. For example, enter 5 to select the download speed as 115200bps.
 6. Press Enter. The terminal displays the following information:


```

Download baudrate is 115200 bps. Please change the terminal's baudrate to
115200 bps, and select XMODEM protocol.
Press enter key when ready.

```
 7. Change the baud rate set at the configuration terminal, so that the baud rate is consistent with the selected download baud rate of the software.
 8. After the baud rate setting at the configuration terminal is completed, disconnect the terminal and reconnect it.
 9. Press Enter to start downloading. The terminal displays the following information:


```

Now please start transfer file with XMODEM protocol.
If you want to exit, Press <Ctrl+X>.
Waiting ... CCCCC


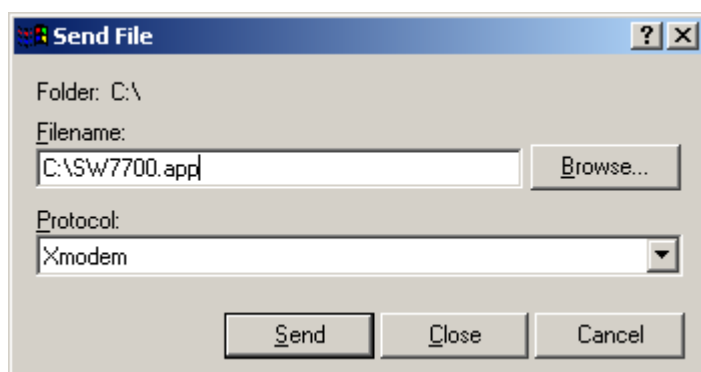
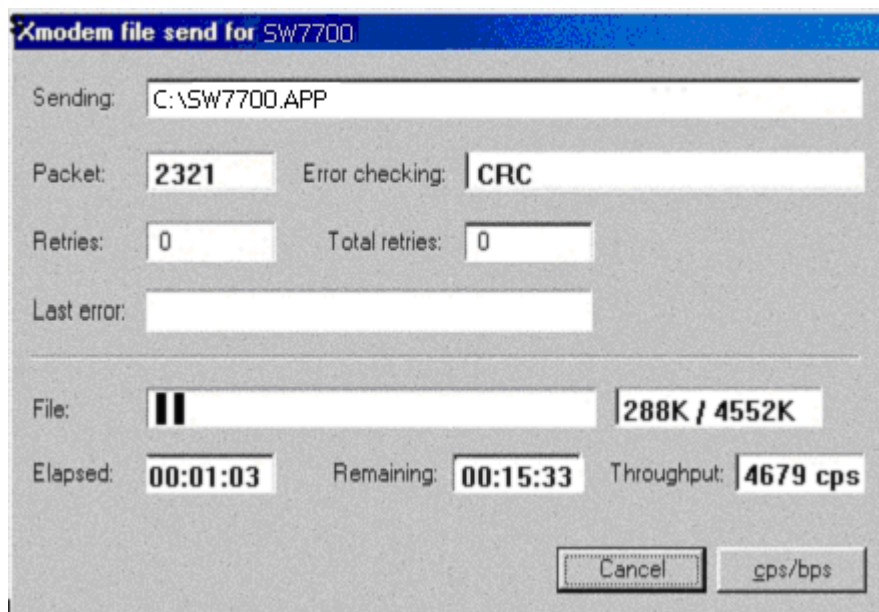
```
-  **Note:** After the terminal baud rate is modified, you must disconnect and then re-connect the terminal emulator, to effect the new setting.
10. Select [Transfer\Send File] from the terminal window.
 11. Click Browse in the Send file dialog box, shown in Figure 27 and select the application you want to download.
 12. Change the protocol name for the download to Xmodem.

Figure 27 Send File dialog box



13. Click Send. The dialog box shown in Figure 28 displays.

Figure 28 Xmodem file send dialog box



14. After the download is complete, the system interface is shown as follows:

Loading ...cc done!

7.3. Upgrading Software Using Ethernet

7.3.1. Upgrading Software Using TFTP

TFTP (Trivial File Transfer Protocol) is simple file transfer protocol that is used without complex interaction between clients and servers.

TFTP is normally implemented based on UDP.

The client initiates a TFTP transmission. To download files, the client sends a read request packet to the TFTP server, receives the packet from the server, and sends the acknowledgement to the server. To upload files, the client sends a write request packet to the TFTP server, sends the data packet to the server, and receives the acknowledgement from the server. There are two modes of TFTP transmission files: the binary mode used for transmitting program files and ASCII mode used for transmitting text files.

Switch 7700 provides the functions of the TFTP client.



Note: The Switch 7700 is not shipped with the TFTP Server program.

To upgrade using TFTP:

1. Connect the switch to the PC from which the file is downloaded, using the 10BASE-T/100BASE-TX port on the Fabric for upgrading. The IP address of the PC is required. At the same time, the switch is externally connected to a PC (which can be the same PC as that the downloaded file is located) using a console port.

2. Run the TFTP Server program on the PC connected with the Ethernet port for upgrading, and specify the file path to the upgrading program.
3. Run the terminal emulator on the PC connected to the console port, and boot the switch to access the BOOT Menu.
4. Enter 1 in the BOOT Menu.
5. Press Enter to access the download application menu as follows.
 1. Set TFTP protocol parameter
 2. Set FTP protocol parameter
 3. Set XMODEM protocol parameter
 0. Return to boot menu
 Enter your choice(0-3):1
6. Enter 1 in the download application menu to select TFTP.
7. Press Enter The following list of TFTP parameters displays:


```
Load File name:
Switch IP address:
Server IP address:
```
8. Complete the input of the relevant information based on the actual requirements
9. Press Enter, the system interface is shown as follows:


```
Are you sure to download file to flash? Yes or No(Y/N)
```
10. Enter Y and the system starts downloading the file. Enter N and the system returns to downloading the program. Enter Y and press Enter, the system begins downloading programs. After the downloading is completed, the system starts write-flash operation. Upon completion of this operation, the terminal display outputs the following information, indicating that the downloading is completed.


```
Loading .....done!
Writing to flash.....done!
```

7.3.2. Upgrading Software Using FTP

Through the Ethernet port, the Switch 7700 can serve as an FTP server or client. It provides users with another means to download the system program software and configure the files. Take the Switch 7700 serving as an FTP client as an example.

To upgrade with FTP, use the following procedure:

1. Connect the switch to the PC where the upgrade file is loaded, using the Ethernet port 10BASE-T. The IP address of the PC is required. At the same time, the switch is externally connected to a PC (that can be the same one as the one where the downloaded file is located) using the console port.
2. Run the FTP Server program on the PC connected to the Ethernet port for upgrading, and specify the file path to the upgrading program.
3. Run the terminal emulator on the PC connected to the console port, and boot the switch to access the BOOT Menu.

4. Enter 1 in the BOOT Menu.
5. Press Enter to access the download program menu.
 1. Set TFTP protocol parameter
 2. Set FTP protocol parameter
 3. Set XMODEM protocol parameter
 0. Return to boot menu

Enter your choice(0-3):2
6. Enter 2 in the download program menu.
7. Select FTP as the protocol for the software upgrade.
8. Press Enter.
9. Set the FTP protocol parameters:

Load File name:

Switch IP address:

Server IP address:

FTP User Name:

FTP User Password:
10. Press Enter. The following question displays:

Are you sure to download file to flash? Yes or No(Y/N)
11. If you enter N, the system returns to downloading program menu. If you enter Y, the system downloads the file, performs the write-flash operation, and displays the following information to indicate that the download is complete:

Loadingdone!

Writing to flash.....done!

7.4. Lost Passwords

If the BootROM password of the switch is lost, contact your local support center, listed on page 57.

Chapter 8 Hardware Maintenance



Warning: When installing or replacing the power module when the power is on, do not touch any naked wire, terminal or any part of the product with a dangerous voltage label. Always wear the anti-static wrist strap when replacing the module.

8.1. Replacing a Power Module

To replace a power module, you need:

- An anti-static wrist strap
- A screwdriver

Use the following steps to replace a power module:

1. Put on the anti-static wrist strap
2. Loosen the captive screw in the module to be replaced, using the screwdriver.
3. Support the module you are removing with one hand and gently pull the handle with the other hand until it slides out of the slot.
4. If you are not going to install another module in this position, install a blank filler plate on the chassis for dust-proofing and heat dissipation.
5. Remove the new power module from the package and check the input mode.

6. Support the module in one hand and hold the handle with another hand. Align the module with the guides in the chassis and slide the module gently into the slot. Ensure the module matches well with the guides.



Caution: As you are inserting the power module, if the pin terminal springs up, the pin cannot be seated into the hole and the system will sound an alarm. If the power module has not been inserted properly, you should slide it out and insert it again to avoid breaking or cracking the power terminals.

7. Fasten the captive screw.



Caution: If the captive screws cannot be fastened, the power module may not have been properly seated. Check them carefully.

The dust-proof cover on the power module can accumulate dust after a long time of usage. To guarantee heat dissipation for the chassis, periodically clean the filter with fresh water and air-dry it.

8.2. Replacing Cards

The FABRIC and I/O modules of the Switch 7700 can be installed and removed basically in the same way. This section describes the general measures of installing and removing these modules.

To replace a module, you need:

- An anti-static wrist strap
- Screwdriver

To remove a module:

1. Wear the anti-static wrist strap and remove all the cables from the module to be removed.
2. Loosen the captive screws, using the screwdriver.
3. Hold the ejector levers on the module with both hands, press them toward both sides to separate the connectors of the module from the motherboard.
4. Gently slide the module along the guides out of the slot.
5. Put the removed module into the package.



Note: Replace the blank filler plate on the chassis if you do not install a new module in the place where the old one was removed.

To replace a module:

1. With both hands, hold the ejector levers on the module that will be installed.
2. Align the module with the guides in the chassis and slide it into the slot gently until you feel the positioning pin on the handle bar touch the hole in the chassis.
3. Press the ejector levers inward and seat the pin on the handle bar into the positioning hole in the chassis.
4. Fasten the captive screws to fix the module, using the screwdriver.

8.3. Replacing the Fan Assembly

As mentioned in Maintenance on page 10, you can hot-swap fan assemblies in the Switch 7700.



Warning: To avoid injury, do not touch any naked wire, terminal, or any part of the product that carries a dangerous voltage.

To replace a fan assembly:

1. Put on the anti-static wrist strap.
2. With both hands, hold the ejector levers on the fan assembly that will be removed. Press them toward both sides of you to separate the fan assembly connector from the backplane.
3. Slide the fan gently along the guides of the slot and pull it out.
4. With both hands, hold the ejector levers of the fan that will be installed. Press them toward both sides of you. Align it with the guides in the chassis and slide it gently into the slot until you feel the positioning pin on the handle bar touch the hole in the chassis.
5. Press the ejector levers inward and seat the pin on the handle bar into the positioning hole in the chassis.



Warning: Install a new fan soon after removing the old one to ensure that the Switch 7700 works normally.

Chapter 9 System Troubleshooting

Although the Switch 7700 has passed comprehensive and strict tests before delivery, faults may occur due to improper installation. This chapter describes how to troubleshoot.

The simplest way to diagnose a fault is to check the system status LEDs on the Fabric modules. In addition, with the DeviceMgr network management system, you can also locate the fault through management software.

9.1. Troubleshooting the Configuration

After the switch is powered on booting information is displayed on the configuration terminal. If the configuration system has failed, there is no screen display at the configuration terminal or the displayed characters are illegible.

9.1.1. No information is displayed on the terminal

After the Switch 7700 is powered on, if there is no information displayed on the terminal, check that:

- The power system is working normally.
- The Fabric is working normally.
- The console cable has been connected to the console port in the Fabric.

If this procedure does not reveal the problem, check that the console cable is properly connected and that the configuration terminal is set correctly.

9.1.2. The displayed characters are illegible

If the displayed characters are illegible, the parameters of configuration terminal may not have been set correctly. Perform the corresponding examinations, referring to Configuration on page 37.

9.2. Troubleshooting Power

If the power LED OK is off, there may be something wrong with the system power supply. Check that:

- The power module has been installed in the position to ensure normal communication with the backplane.
- The switch power has been turned on.
- The power cord has been properly connected.
- The source voltage is correct.

Table 30 Power LEDs on the Fabric

Indicator	State Description
OK	On — the power works normally.

	Off — the power fails to work or has not been installed yet.
FAIL	On — the power fails to work. Off means that the power works normally or has not been installed yet.

9.3. Troubleshooting the Fan

If the fan LED OK is off, check that:

- The fan has been installed in the correct position for normal communication with the backplane.
- Every heat dissipation fan is working normally.
- There is nothing blocking the vent of the chassis.
- The blank filler plates are furnished on the chassis where there is no module inserted.

Table 31 Fan LEDs on the Fabric

Indicator	State Description
OK	On — the fan works normally. Off — the fan fails to work or has not been installed yet.
FAIL	On — the fan fails to work. Off — the fan works normally or has not been installed yet.

9.4. Troubleshooting the Cards

The Fabric and I/O module LEDs show the states of the FABRIC and the 6 I/O modules, as described in Table 32.

- If the LED ALM of the module remains green or green flashing, it indicates there is something wrong with the module.
- During the process of resetting the module, the ALM LED remains on. After normal booting, it is off.
- When resetting the module, if the ALM LED remains off, the module may not be connected to the power source. Check that the module has been properly installed in the correct position.

Table 32 Card LEDs on the Fabric

Indicator	State Description
RUN	Green/Off — the module fails to work or has not been inserted. Green Flashing — the module works normally.
ALM	Off — the module works normally or has not been inserted. Remaining on — the module failed to work.

Chapter 10 Technical Support

3Com provides easy access to technical support information through a variety of services. This chapter describes these services.

Information contained in this chapter is correct at time of publication. For the most recent information, 3Com recommends that you access the 3Com Corporation World Wide Web site.

10.1. Online Technical Services

3Com offers worldwide product support 24 hours a day, 7 days a week, through the following online systems:

- World Wide Web site
- 3Com Knowledgebase Web Services
- 3Com FTP site

10.1.1. World Wide Web Site

To access the latest networking information on the 3Com Corporation World Wide Web site, enter this URL into your Internet browser:

`http://www.3com.com/`

This service provides access to online support information such as technical documentation and software library, as well as support options that range from technical education to maintenance and professional services.

10.1.2. 3Com Knowledgebase Web Services

The 3Com Knowledgebase is a database of technical information to help you install, upgrade, configure, or support 3Com products. The Knowledgebase is updated daily with technical information discovered by 3Com technical support engineers. This complimentary service, which is available 24 hours a day, 7 days a week to 3Com customers and partners, is located on the 3Com Corporation World Wide Web site at:

`http://www.knowledgebase_3com.com/`

10.1.3. 3Com FTP Site

Download drivers, patches, software, and MIBs across the Internet from the 3Com public FTP site. This service is available 24 hours a day, 7 days a week.

To connect to the 3Com FTP site, enter the following information into your FTP client:

Hostname: `ftp.3com.com`

Username: `anonymous`

Password: `<your Internet e-mail address>`



Note: You do not need a user name and password with Web browser software such as Netscape Navigator and Internet Explorer.

10.2. Support from Your Network Supplier

If you require additional assistance, contact your network supplier. Many suppliers are authorized 3Com service partners who are qualified to provide a variety of services, including network planning, installation, hardware maintenance, application training, and support services.

When you contact your network supplier for assistance, have the following information ready:

- Product model name, part number, and serial number
- A list of system hardware and software, including revision levels
- Diagnostic error messages
- Details about recent configuration changes, if applicable

If you are unable to contact your network supplier, see the following section on how to contact 3Com.

10.3. Support from 3Com

If you are unable to obtain assistance from the 3Com online technical resources or from your network supplier, 3Com offers email and telephone technical support services. To find out more about your support options, email or call the 3Com technical support services at the location nearest you.

10.3.1. Email Support

Some 3Com regions offer an email support service. To access this service for your region, use the appropriate URL or email address from the list below.

Asia, Pacific Rim

From this region, email: apr_technical_support@3com.com

Europe, Middle East and Africa

Enter the URL: <http://emea.3com.com/support/email.html>

Latin America

Spanish speakers, enter the URL: <http://lat.3com.com/lat/support/form.html>

Portuguese speakers, enter the URL: <http://lat.3com.com/br/support/form.html>

English speakers, email: lat_support_anc@3com.com

10.3.2. Telephone Support

When you contact 3Com for assistance, have the following information ready:

- Product model name, part number, and serial number
- A list of system hardware and software, including revision levels
- Diagnostic error messages
- Details about recent configuration changes, if applicable

Table 33 provides a list of worldwide technical telephone support numbers. These numbers are correct at the time of publication. Refer to the 3Com Web site for updated information.

Table 33 Telephone support numbers

Country	Telephone Number	Country	Telephone Number
Asia, Pacific Rim		Europe, Middle East and Africa	
Australia	1 800 678 515	From anywhere in these regions, call:	+44 (0)1442 435529 phone
India	+61 2 9424 5179 or 000800 6501111		
Indonesia	001 803 61 009	Austria	01 7956 7124
Malaysia	1800 801 777	Belgium (Flemish)	070 700 000
New Zealand	0800 446 398	Belgium (French)	070 700 770
Pakistan	+61 2 9937 5083	Denmark	7010 7289
Philippines	1235 61 266 2602 or +61 2 9937 5076	Finland	01080 2783
Singapore	800 6161 463	France	0825 809 622
S. Korea	00798 611 2230 or 02 3455 6455	Germany	01805 404 747
Taiwan	0080 611 261	Hungary	06800 14466
Thailand	001 800 611 2000	Ireland	1800 509359
		Israel	1800 943 2632
		Italy	199 161346
		Luxembourg	800 29880
		Netherlands	0900 777 7737
		Norway	815 33 047
		Poland	00800 441 1357
		Portugal	707 200 123
		South Africa	0800 991196
		Spain	9 021 60455
		Sweden	07711 14453
		Switzerland	08488 50112
		U.K.	0870 241 3901
Latin America		North America:	
From the Caribbean, Central and South America, call:			1 800 876 3266
Antigua	1 800 988 2112		
Argentina	0 810 444 3COM		
Aruba	1 800 998 2112		
Bahamas	1 800 998 2112		
Barbados	1 800 998 2112		
Belize	52 5 201 0010		
Bermuda	1 800 998 2112		
Bonaire	1 800 998 2112		
Brazil	0800 13 3COM		
Cayman	1 800 998 2112		
Chile	AT&T +800 998 2112		
Colombia	AT&T +800 998 2112		
Costa Rica	AT&T +800 998 2112		
Curacao	1 800 998 2112		
Ecuador	AT&T +800 998 2112		
Dominican Republic	AT&T +800 998 2112		
Guatemala	AT&T +800 998 2112		
Haiti	57 1 657 0888		
Honduras	AT&T +800 998 2112		
Jamaica	1 800 998 2112		
Martinique	571 657 0888		
Mexico	01 800 849CARE		
Nicaragua	AT&T +800 998 2112		
Panama	AT&T +800 998 2112		
Paraguay	54 11 4894 1888		
Peru	AT&T +800 998 2112		
Puerto Rico	1 800 998 2112		
Salvador	AT&T +800 998 2112		
Trinidad and Tobago	1 800 998 2112		
Uruguay	AT&T +800 998 2112		
Venezuela	AT&T +800 998 2112		
Virgin Islands	57 1 657 0888		

10.4. Returning Products for Repair

Before you send a product directly to 3Com for repair, you must first obtain an authorization number. Products sent to 3Com without authorization numbers will be returned to the sender unopened, at the sender's expense.

You can obtain an authorization number (called an RMA) by entering the following URL into your Internet browser:

http://www.3com.com/support/en_US/repair

Alternatively, you can obtain an RMA by calling or faxing one of the numbers in Table 34:

Table 34 Fax Numbers for return authorization numbers

Country	Telephone Number	Fax Number
Asia, Pacific Rim	+65 543 6500	+65 543 6348
Europe, Middle East and Africa	+44 (0)1442 435529	
Austria	01 7956 7124	
Belgium (Flemish)	070 700 000	
Belgium (French)	070 700 770	
Denmark	7010 7289	
Finland	01080 2783	
France	0825 809 622	
Germany	01805 404 747	
Hungary	06800 14466	
Ireland	1800 509359	
Israel	1800 943 2632	
Italy	199 161346	
Luxembourg	800 29880	
Netherlands	0900 777 7737	
Norway	815 33 047	
Poland	00800 441 1357	
Portugal	707 200 123	
South Africa	0800 991196	
Spain	9 021 60455	
Sweden	07711 14453	
Switzerland	08488 50112	
U.K.	0870 241 3901	
USA and Canada	1 800 876 3266	1 508 323 6061 (not toll free)
Latin America		
Antigua	1-800-988-2112	
Argentina	0-810-444-3COM	
Aruba	1-800-998-2112	
Bahamas	1-800-998-2112	
Barbados	1-800-998-2112	
Belize	52-5-201-0010	
Bermuda	1-800-998-2112	
Bonaire	1-800-998-2112	
Brazil	0800-13-3COM	
Cayman	1-800-998-2112	
Chile	AT&T +800-998-2112	
Colombia	AT&T +800-998-2112	
Costa Rica	AT&T +800-998-2112	
Curacao	1-800-998-2112	
Ecuador	AT&T +800-998-2112	
Dominican Republic	AT&T +800-998-2112	
Guatemala	AT&T +800-998-2112	
Haiti	57-1-657-0888	
Honduras	AT&T +800-998-2112	
Jamaica	1-800-998-2112	
Martinique	57-1-657-0888	
Mexico	01-800-849CARE	

Nicaragua	AT&T +800-998-2112	
Panama	AT&T +800-998-2112	
Paraguay	54-11-4894-1888	
Peru	AT&T +800-998-2112	
Puerto Rico	1-800-998-2112	
Salvador	AT&T +800-998-2112	
Trinidad and Tobago	1-800-998-2112	
Uruguay	AT&T +800-998-2112	
Venezuela	AT&T +800-998-2112	
Virgin Islands	57-1-657-0888	